

LoRaWAN Metering Module (HAC-MLW) User Manual V1.0



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1. Overview

The HAC-MLW wireless remote meter reading system integrates acquisition, measurement, bidirectional communication and valve control etc, and it conforms to the LORAWAN1.0.2 standard protocol which is formulated by LoRa Alliance. The system contains wireless meter reading acquisition module HAC-MLW, gateway LoRaWAN, LoRaWAN meter reading charging system (or we call it cloud platform).

2. Meter Module Feature

2.1. Electrical characteristics

No.	Item	Function description
1	Working frequency	It's compatible with LoRaWAN® (433~510MHz or 863~928MHz, which is optional)
2	Maximum transmitting power	21±1dBm (which is in accordance with the requirements of power limit in different areas of the LoRaWAN protocol)
3	Receiving sensitivity	<-136dBm
4	Working temperature	-20°C~+70°C
5	Working voltage	+2.5V~+3.8V
6	Receiving current	≤9mA
7	Transmitting current	≤130mA (which is related to transmitting power)
8	Transmitting distance	The maximum line of sight communication distance between the gateway and the meter module is 15km
9	Valve electrical parameter	+2.5V~+3.8V
10	Sleep current	≤15uA
11	Dimension	42.1mm*24.8mm*3.2mm

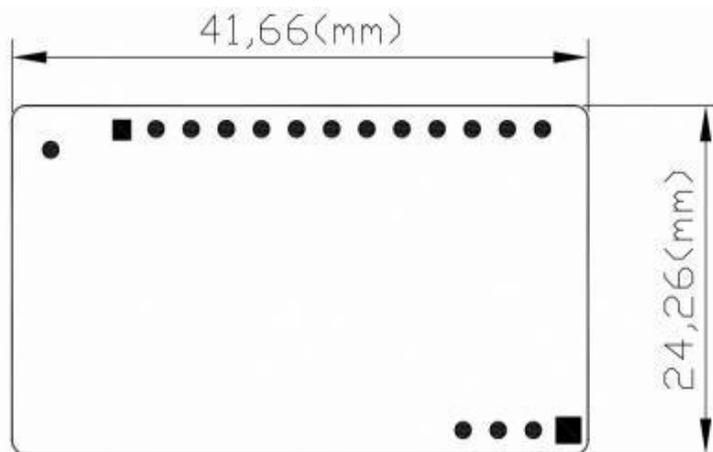
2.2 Feature Description

No.	Feature	Function Description
1	Data reporting	<p>There are two data reporting methods.</p> <p>Magnetic trigger to report data: The magnet triggers the hall components of the meter module, and the trigger time must be greater than 2S.</p> <p>Timed and active reporting: the reporting time slice is automatically allocated according to the Device Eui of the meter module, and the data is reported every 24 hours.</p>
2	Power management	It will detect voltages of various states of metering module in real-time and report.

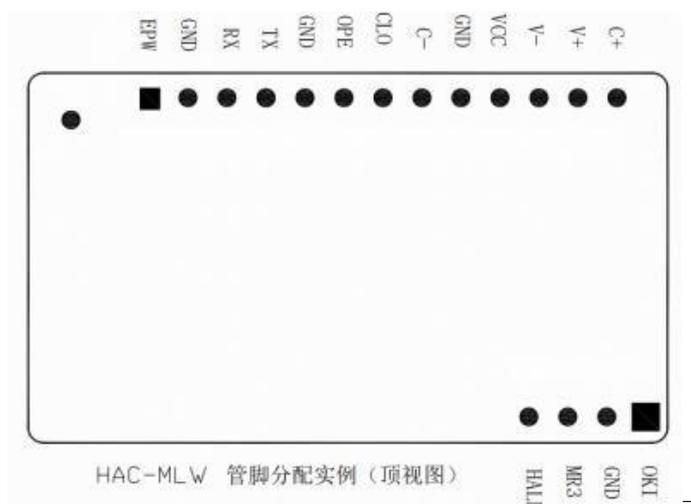
3	Measurement	Support dual reed switch,dual hall metering mode.
4	Power-down storage	Support power-down storage function,there is no need to re-initialize the measurement value after power-off
5	Magnetic attack detection	Support magnetic attack detection, it will generate alarm sign when malicious magnetic attack is detected
6	Monthly and yearly frozen data storage	It can save 10 years of annual frozen data and monthly frozen data of the last 128 months, and the cloud platform can query historical data
7	Parameters setting	Support wireless near and remote parameter settings. The remote parameter setting is realized through the cloud platform, and the near parameter setting is realized through the production test tool.
8	Valve control	Valve type can be set to support remote valve control and valve fault detection (which is optional)
9	The valve will be closed when the power is off.	When the power is down,the valve will be closed and reported.
10	Dredging valve	It supports the function of timing dredging valve and command dredging valve.

3.Meter module structure and interface definition

3.1. Module structure dimension



HAC-MLW 尺寸图



3.2. Interface definition

No.	Name	Pin description
1	EPW	Power Output
2	GND	Power Negative
3	RX	The S1 access terminal of the pulse can be extended to the RX terminal of LEUART
4	TX	The S2 access terminal of the pulse can be extended to the TX terminal of LEUART
5	GN	Power Negative
6	OPE	Valve open in place detection and signal input terminal
7	CLO	Valve close in place detection and signal input terminal
8	V-	Valve motor drive output terminal
9	V+	Valve motor drive output terminal
10	GND	Power Negative
11	VCC	Power positive (DC2.8V~6.0V)
12	C-	Farad capacitor negative
13	C+	Farad capacitor positive
14	HALL	Hall trigger detection
15	MR3	ADC sampling
16	OKI	Reserved

Note: The withstand voltage of the farad capacitor must be greater than the power supply voltage.

VCC: Connect the positive electrode of the 3.6V ER18505 battery.

EPW: Providing a 3.0V regulated power supply to the outside, the maximum current is 100mA, it needs to be customized and opened.

RX TX: Metering pin, which can also be used for magnetic attack detection.

V-V+: Valve control output pin, which can also be used for valve locked-rotor detection and no-valve detection.

The HAC-MLW module can be widely used in wireless remote meter reading systems. The module can be integrated in the meter or installed in a suitable position with an enclosure.

4. Instruction of production test tool

4.1.

No.	Function	LED status description
1	Power-on initialization	The LED light of the meter module will flash once when the power is on (it will be very short)
2	Chip voltage alarm	When the meter module is powered on for the first time, the chip voltage is lower than 3V, the meter module LED light will continue to flash at a frequency of 100ms, and the flashing time is about 30S.
3	Networking	When the meter module is connected to the Internet, the LED light is always on, and the LED light is off when the connection is successful or the maximum number of connections is reached. The LED light on time is related to the networking time, the longest time is 25 seconds (3 times networking).
4	Report data regularly	The meter module reports data regularly and the LED light will flash once (it takes a short time)
5	Magnetic trigger to report data	After the network is successfully connected, the LED of the data reported by the magnetic trigger meter module will flash twice (it will be very short).

5. Instructions of meter module

Step 1. Assemble the meter. It's processed as per the assembly document provided by HAC Telecom , if it is already assembled or does not need to be assembled, ignore this step.

Step 2. Information report and installation: report installation of meter module information (APPK, EUI, etc.) on the cloud platform (which is mainly based on the platform actually used by clients). After the installation is completed, check whether the meter module information is consistent with the platform. If the meter module has not joined the local LoRaWAN network at this time, please follow

step 3; if it has already been joined, please skip step 3.

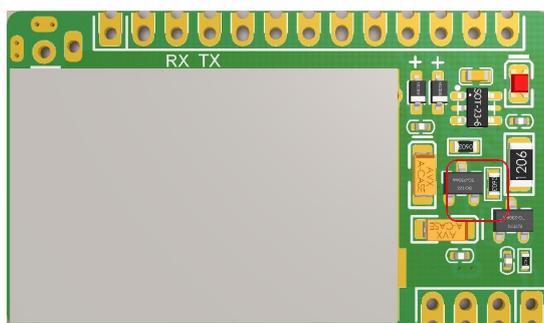
Step 3. Join the local LoRaWAN network: the magnetic triggering meter module initiates networking, the LED light keeps on during the networking process, and the LED light will turn off when the networking is successful.

Step 4. Report data: Magnetic trigger to report data, check whether the water meter parameters and flow data are accurate through the cloud platform. If the data is deviated, it can be modified by setting parameters.

Step 5. Parameter setting: After the meter module is assembled, use the production test tool provided by HAC (if provided) or the cloud platform for parameter setting. To set the parameters using the cloud platform, you must complete the meter module information installation on the cloud platform.

Step 6. The meter module goes offline: the meter module fails to report in two consecutive reporting cycles, and the meter module goes offline. The next time the data is reported regularly, the network request will be initiated automatically.

The hall element of metering module is as follow:



6. Precautions

6.1. The magnet triggers the hall components of the meter module. The triggering time must be greater than 2S. If the trigger time is less than 2S, there is a probability that the data report will fail.

6.2. The magnetic trigger reporting function is invalid when the meter module is connected to the Internet (the LED light of module is always on) or when the valve is controlled.

6.3. The cloud platform cannot check the data reported by the magnetic trigger. The processing method is as follows:

- a) Observe whether the LED indicator status of the meter module meets the described in Chapter 4 when the data is reported by the magnetic trigger.
- b) Check whether the installation information of the cloud platform is consistent with the information of the meter module.
- c) Still unable to solve the data reporting problem, please contact our technical staff.

7. Instruction of Production Test Tool

7.1. Tool list

No.	Tool list	Function description
1	HAC-MLW-F-T1-M2	Parameters setting and test data transfer
2	HAC-MLW-F-T2-M2	Monitor the field strength value of X meters from the LoRaWAN water meter (the distance is based on the production environment, select the returned field strength value -80dBm (the default fluctuation is 10 dBm)) to achieve fixed distance monitor.
3	5V RS232 serial cables 2PCS	Data transmission and HAC-MLW-T1/2-M2 power supply
4	10cm 868MHz rubber rod antenna 2PCS	HAC-MLW-F-T1/2-M2 antenna
5	RS232 to USB serial cable	HAC-MLW-F-T1-M2 data transmission adapter cable
6	QR code scanning gun	Scan the QR code label of the LoRaWAN water meter to quickly get DeviceEui (which is optional)
7	IR communication device	Parameters setting
8	USB extended cable	Extend infrared communication device

It's shown as below:



7.2. Device connection

7.2.1. Wireless communication device connection

1) HAC-MLW-T1-M2 device connection, 5V RS232 serial cable DB9 female with power interface connects to HAC-MLW-T1-M2, the other end of DB9 female interface transfers RS232 to USB serial cable to connect to the PC. The 5V RS232 serial cable adapter connects to 220V urban electricity.

It's shown as below:



2) HAC-MLW-T2-M2 equipment connection, 5V RS232 serial cable DB9 female with power interface connects to HAC-MLW-T2-M2, 5V RS232 serial cable adapter connects to 220V urban electricity (HAC-MLW-T2-M2 Please refer to 4.3 sample meter standard data collection for the placement location).

3) The QR code scanner is connected to the device, and the QR code scanner is connected to the PC.

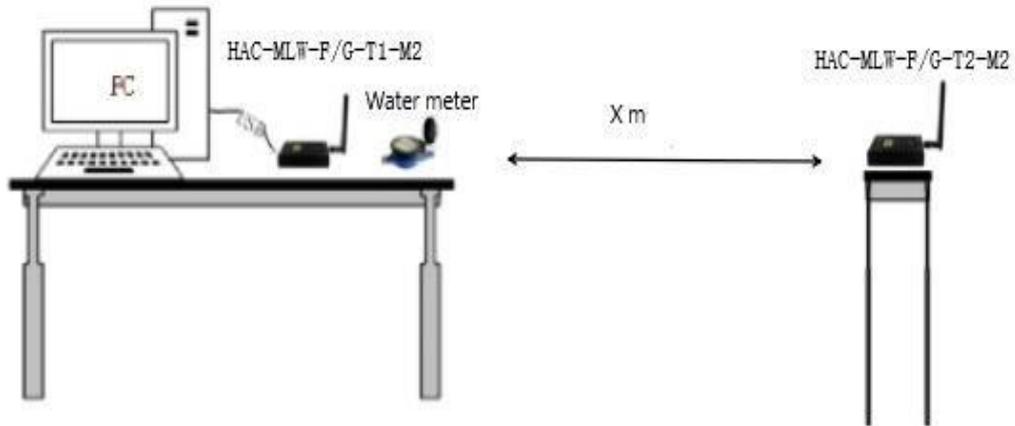
7.2.2. Infrared communication device connection

1) use a USB extended cable to connect the infrared communication device to the PC.

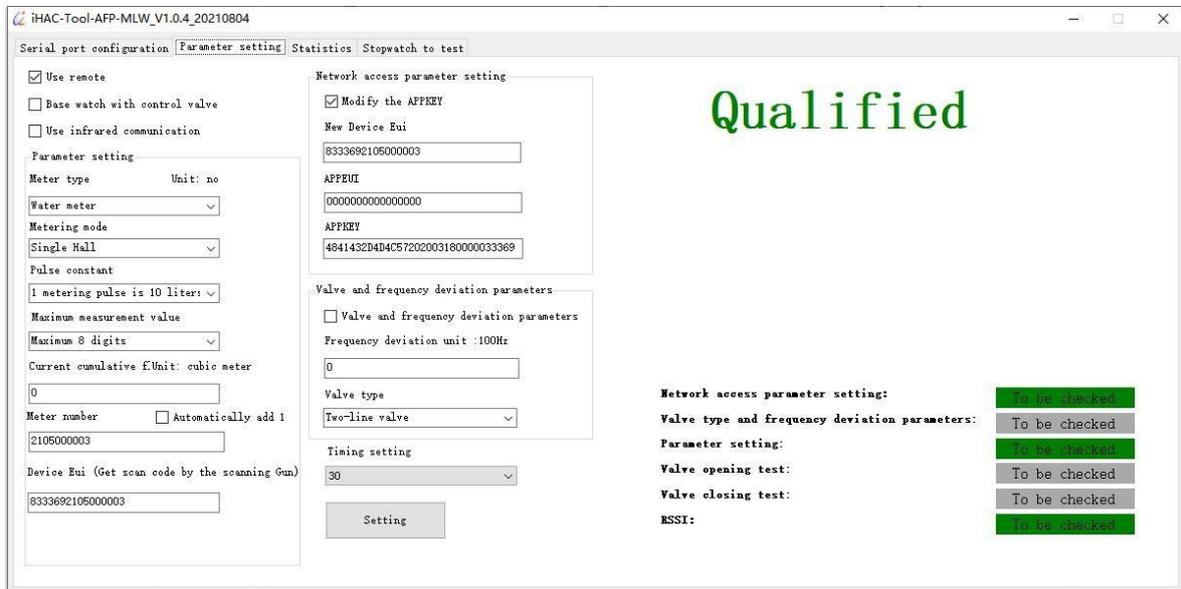
7.2.3. Meter data acquisition (wireless communication mode)

Place the HAC-MLW-F-T1-M2 and the standard water meter on the workstation, turn on the host computer and switch to the [Run meter Test] interface, use a magnet to trigger the standard water meter to report data, and wait for the remote end of the HAC-MLW-F-T2-M2 to return data. Adjust the distance between HAC-MLW-F-T2-M2 and the standard water meter so that the returned field strength value is around -80dBm. At this time, fix the position of HAC-MLW-F-T2-M2 , and use the magnet to trigger the standard water meter to obtain 10 packets of remote data. The average of the field strength value of 10 packets' data is the standard field strength value. The standard field strength value is used in the supported software to judge qualified threshold value of the field strength.

In the case of two stations, please ensure that the field strength value of the water meter collected by the distance between the HAC-MLW-T2-M2 and the two stations is between -70dBm and -90dBm. The deployment of the sampling standard field strength is shown in the figure below:



The interface of parameters setting is below:



Obtain the remote field strength value:

The screenshot shows the 'Statistics' tab of the iHAC-Tool-AFP-MLW_V1.0.4_20210804 software. It displays a table of device data for Device Eui: 8333692105000003. The table has the following columns: Battery voltage(V), Valve failure, Magnetic attack, Battery power, DER, Valve status, Metering failure, Historical magnetic attack, Remote flag, Trigger source, and RSI value(dBm). The 'Remote flag' column is highlighted with a red box, and the 'RSI value(dBm)' column shows values of -81, -58, and -59 for the three rows.

	Battery voltage(V)	Valve failure	Magnetic attack	Battery power	DER	Valve status	Metering failure	Historical magnetic attack	Remote flag	Trigger source	RSI value(dBm)
▶	3.6	Normal	Normal	Normal	Normal	Open	Normal (Not ...)	Normal	Remote data	Platform set...	-81
	3.6	Normal	Normal	Normal	Normal	Open	Normal (Not ...)	Normal	Module data	Platform set...	-58
	3.6	Normal	Normal	Normal	Normal	Open	Normal (Not ...)	Normal	Module data	Magnetic tri...	-59

7.2.4 Supported software

The software supports two communication methods, namely wireless communication and infrared communication. The software cannot use two communication methods at the same time, only one of them can be used.

7.2.5. Software installation

Don't need to install the supported software.

Right-click the execute file  (iHAC-Tool-AFP-MLW_V1.0.4_20210804.exe) on the desktop and run it with the privilege of administrator.

7.2.6. Interface - 【Serial port setting】

1. Module serial port configuration, the serial port is selected according to the actual situation (please check the serial port in the device manager), the baud rate is 9600 bps, and no check.

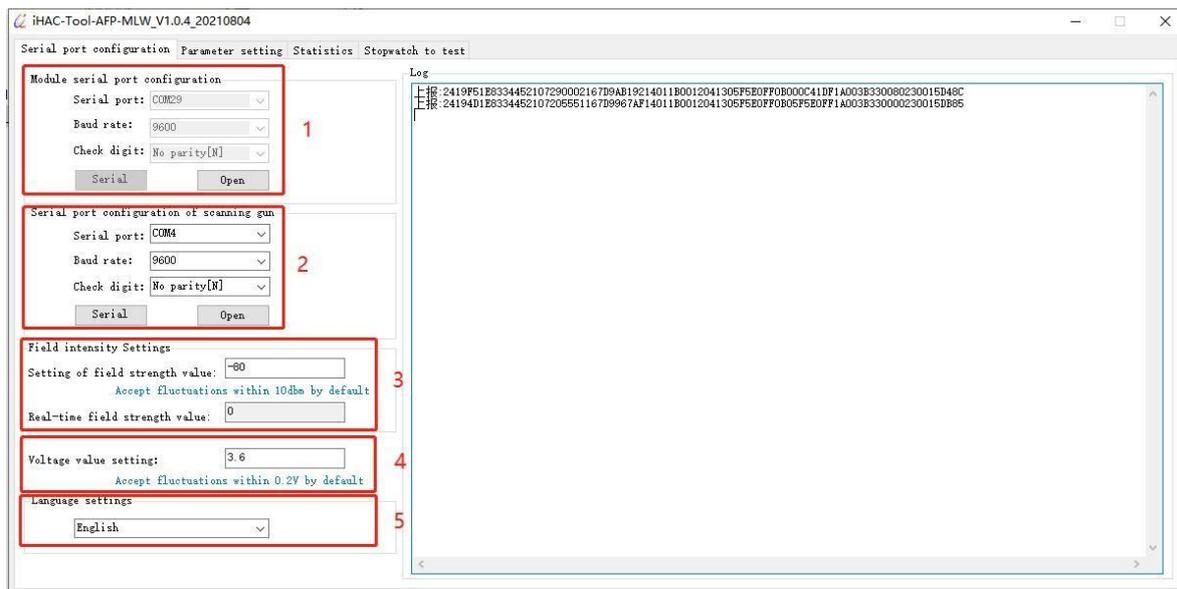
2. Scanner serial port configuration, there are two ways of scanner data interface: ①Serial port mode, configure it according to the actual situation of scanner; ②USB mode, do not need to configure the serial port parameters, just connect to the computer and use it.

3. The qualified field strength threshold value of the water meter and HAC-MLW-T2-M2 communication, the qualified range of field strength value can be obtained by sampling the standard water meter (the standard value method: trigger the standard water meter by a magnet to obtain 10 packets of remote data, take the average of the field strength values in the 10 packets of data). For more details, please refer to the standard data collection of the sample meter in table 7.3.

4. The voltage qualified value of battery is set to 3.6V.

5. Language setting: choose Chinese or English display interface and report data

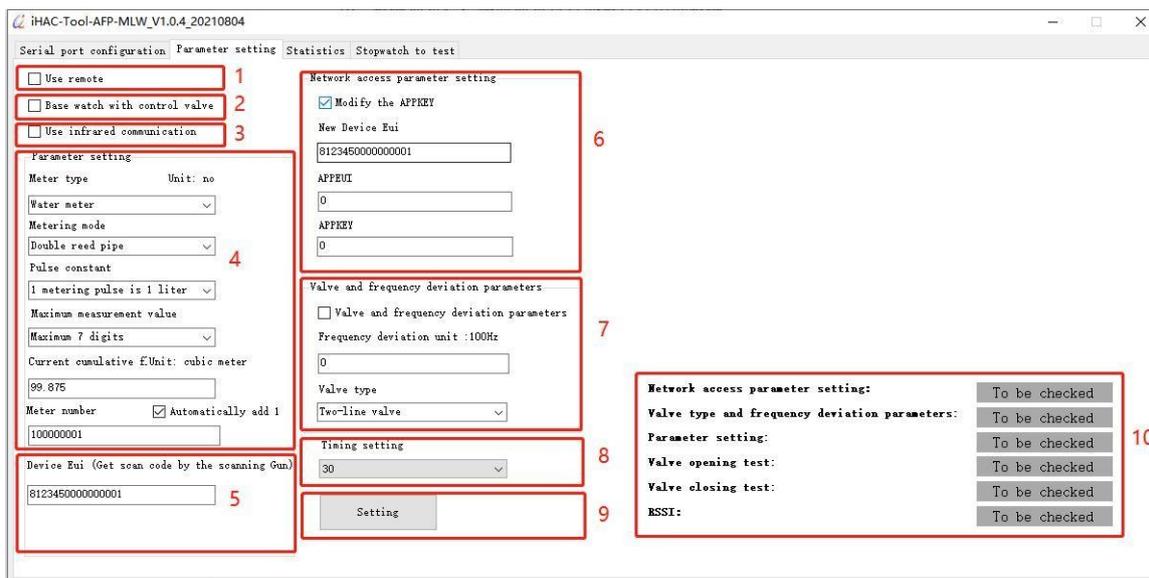
It's shown as below:



7.2.7. Interface - 【Parameters Setting】

- 1). “Use Remote”, check “Use Remote” to enable the field strength value monitoring function of the fixed-distance communication between the water meter and HAC-MLW-T2-M2.
- 2). “The base meter with valve”, it’s selected according to the type of water meter valve. When the water meter has a valve, check “The base meter with valve” and the valve control command will be executed.
- 3). “Water meter parameters”, preset water meter parameters, including meter type, measurement mode, pulse constant, maximum measurement value, current cumulative flow.
- 4). “Meter number”, it’s automatically increased by 1 when it is turned on, and it’s automatically increased by 1 based on the success of the previous setting.
- 5). “DeviceEui”, the DeviceEui of the water meter to be tested, scan the QR code label of the water meter with the scanner to quickly obtain the DeviceEui of the water meter.
- 6). Network access parameters: preset DeviceEui, APPEUI, APPKEY of sample meter. Among them, check "AppKEY transmitted or not", you can set DeviceEui, APPEUI, APPKEY, and if you don’t transmit AppKEY, you can only set DeviceEui.
- 7). Valve and frequency deviation parameters: preset the valve type and frequency deviation of the sample meter. Check the "valve and frequency deviation parameters" to set the sample meter frequency deviation and valve type, and if you don’t select valve and frequency deviation parameters" , the valve type and frequency deviation parameters have been set at the factory, so there is no need to set under the normal condition.
- 8). Timing time setting: the time of the entire setting process after clicking the "Set" button.
- 9). After setting and presetting the parameters, click the "Setting" button to start the countdown. If the setting is completed within 60 seconds, it will proceed to the next test. If the setting is not completed, the prompt "Failure, detection timeout" will be output on the right.
- 10). Real-time display of setting parameters and test results.

It's shown as below.



7.2.8 Interface - [Data Statistics]

After the test is passed, the last reported data will be recorded (the data will not be recorded when the test is unqualified), and the recorded data will be generated into an Excel and stored in the "ExcelFile" file in the installation directory.

It's shown as below:

The screenshot shows the 'Statistics' tab of the software interface, displaying a table of recorded data. The table has the following columns: No. (Non-module data), Time, DeviceEui, Meter no., Pulse constant, Table type, Metering mode, Maximum measurement value (m³), Current cumulative Flow (m³), and Battery voltage (V). The data is as follows:

No. (Non-module data)	Time	DeviceEui	Meter no.	Pulse constant	Table type	Metering mode	Maximum measurement value (m³)	Current cumulative Flow (m³)	Battery voltage (V)
9	2021-08-05 09:39:59	8333692105000003	2105000003	1 metering pulse is 1...	Water meter	Single Hall	99999.99	0	3.66
8	2021-08-05 09:25:35	8333692105000003	2105000003	1 metering pulse is 1...	Water meter	Single Hall	99999.99	0	3.6
7	2021-08-05 09:25:00	8333692105000003	2105000003	1 metering pulse is 1...	Water meter	Single Hall	99999.99	0	3.6
6	2021-08-05 09:24:15	8333692105000003	2105000008	1 metering pulse is 1...	Water meter	Single Hall	99999.99	0	3.6
5	2021-08-05 09:23:52	8333692105000003	2105000007	1 metering pulse is 1...	Water meter	Single Hall	99999.99	0	3.6
4	2021-08-05 09:22:12	8333692105000003	2105000006	1 metering pulse is 1...	Water meter	Single Hall	99999.99	0	3.6
3	2021-08-05 09:20:33	8333692105000003	2105000005	1 metering pulse is 1...	Water meter	Single Hall	99999.99	0	3.6
2	2021-08-05 09:15:14	8333692105000003	2105000004	1 metering pulse is 1...	Water meter	Single Hall	99999.99	0	3.6
1	2021-08-05 09:05:28	8333692105000003	2105000003	1 metering pulse is 1...	Water meter	Single Hall	99999.99	0	3.66

iHAC-Tool-AFP-MLW_V1.0.4_20210804 > ExcelFile

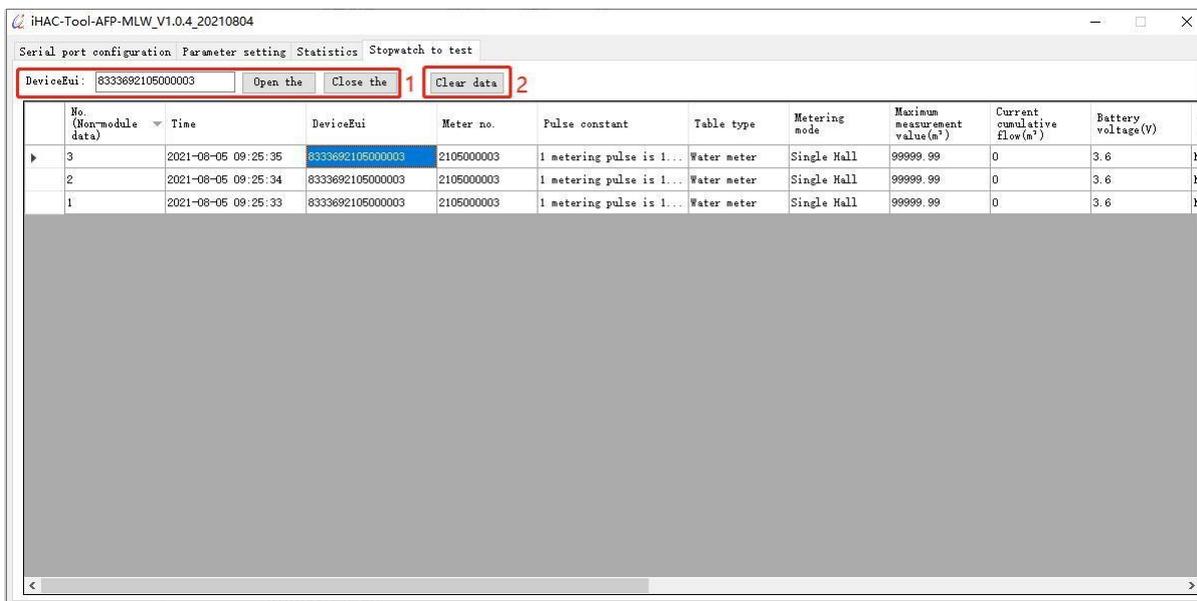
名称	修改日期	类型	大小
2020-06-30.xls	2020/6/30 14:27	XLS 工作表	10 KB
2020-08-27.xls	2020/8/27 9:00	XLS 工作表	6 KB
2020-11-17.xls	2020/11/17 17:30	XLS 工作表	7 KB
2021-01-09.xls	2021/1/9 16:14	XLS 工作表	9 KB
2021-05-17.xls	2021/5/17 10:25	XLS 工作表	6 KB
2021-05-20.xls	2021/5/20 17:11	XLS 工作表	6 KB
2021-08-03.xls	2021/8/3 20:44	XLS 工作表	43 KB
2021-08-04.xls	2021/8/4 10:11	XLS 工作表	12 KB

7.2.9 Interface- [Running Meter Test]

Real-time display of data in the process of setting parameters, and supports valve control.

- 1). Valve control: fill in the DeviceEui number, click the button “valve open” or “valve close” , and then use a magnet to trigger the water meter to report data to achieve valve control.
- 2). Clear the data: click the button "Clear the Data" to clear the data displayed in the list.

It’s shown as below:

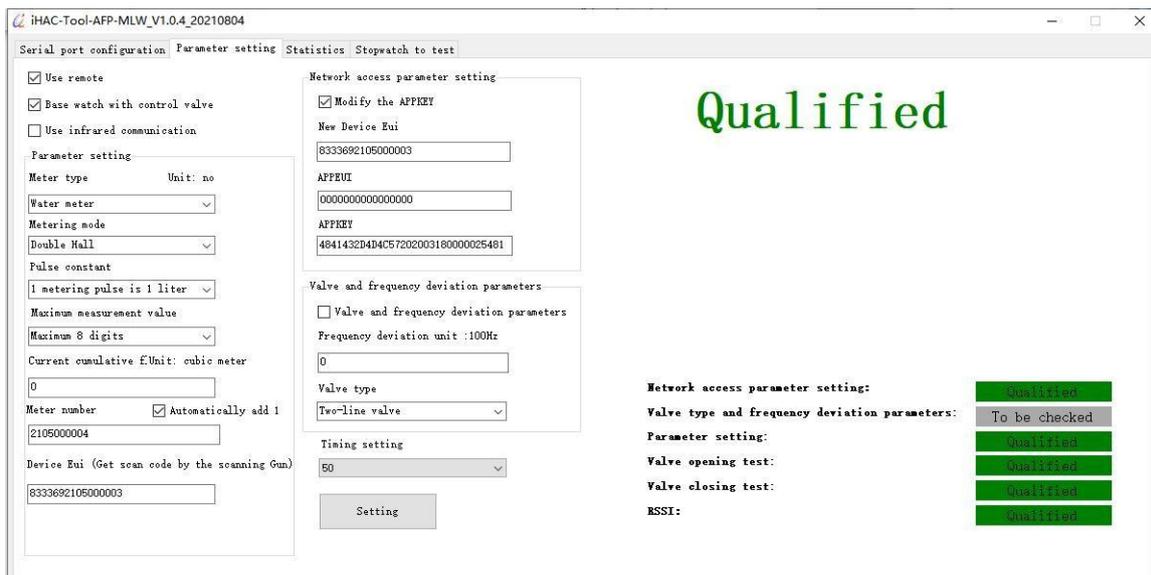


8. Production Test Flow

8.1 Wireless communication mode

8.1.1 The production setting steps can be referred as below:

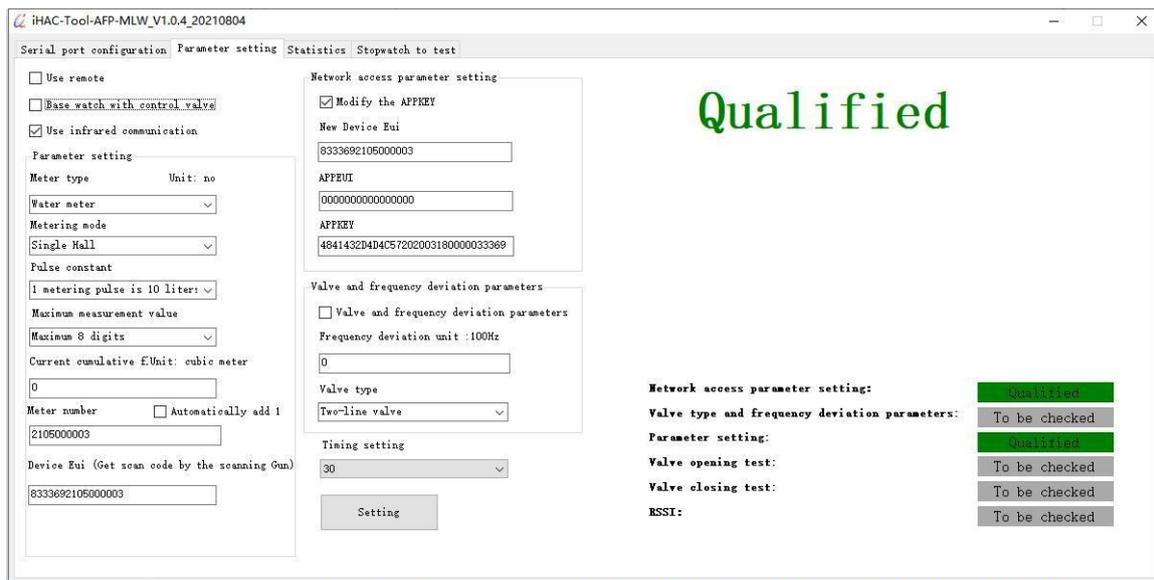
- 1). Check "Use remote" and "Base meter with valve".
- 2). Preset the parameters of meter.
- 3). Use the scanner to scan the QR code label of meter to obtain DeviceEui, or manually enter it.
- 4). After clicking "Setting", the meter will be triggered to report data and start production test. After the production test is completed, the corresponding prompted message will be output on the upper right. It’s shown as below:



8.2. Infrared communication method (the meter must support infrared communication)

8.2.1 The production setup steps are as follow:

- 1). Check "Use infrared communication".
- 2). Preset meter parameters
- 3). Use the scanner to scan the QR code label of meter to obtain DeviceEui, or manually enter it.
- 4). Align the infrared communication device vertically with the infrared transceiver diodes of meter, and the distance between them is less than 8cm.
- 5). After clicking "Setting", the meter will be triggered to report data and start production test. After the production test is completed, the corresponding prompted message will be output on the upper right. It's shown as below:



8.3. Precautions for production setup

- 1). The magnet triggers hall components of meter module. The triggering time must be greater than 2S. If it's less than 2S, there is a possibility that the triggering of the data report will fail.
- 2). DeviceEui is the only address for communication between meter and the supported software. The DeviceEui entered by the supported software must be consistent with the DeviceEui of meter.
- 3). When the meter is connected to the Internet (the red light is always on) or when re-transmitting, the function of triggering “data report” is invalid.
- 4). There is a fault flag in the data reported by the meter, and the parameters can be set only after the fault flag is cleared.
- 5). Infrared communication will affect the communication between the product and infrared tools under strong light. It is necessary to avoid performing infrared communication under strong light.
- 6). Use wireless communication to set the parameters, try to avoid multi-station simultaneous production settings, and the production settings will interfere with each other. The more stations, the greater the interference, and the greater the probability of parameter failure.
- 7). When modifying APPKEY, the default value of APPEUI must be modified. The default value of APPEUI is 4841434D4C570001.

9. LoRaWAN Gateway Device Feature

9.1. Electrical characteristics

No.	Function	Function Description
1	Working voltage	PoE IEEE 802.3af Class A, 24V; DC 12~24V
2	Working frequency	It's compatible with LoRaWAN® (433~510MHz or 863~928MHz , which is optional)
3	Max transmitting power	27±1dBm (It conforms with the power limitation requirements of different areas in the LoRaWAN protocol)

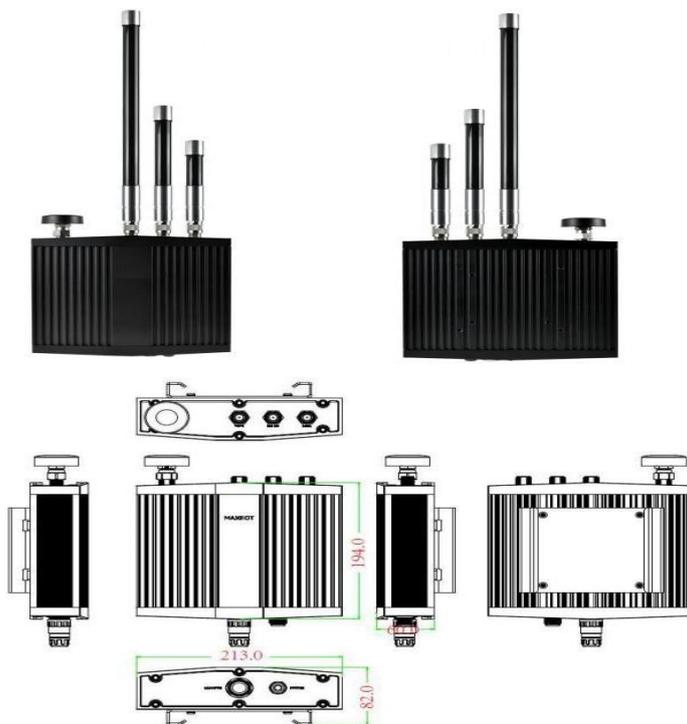
4	Receiving sensitivity	<-142.5dBm
5	Standby current	≤30mA
6	Working current	≤350mA(which is related to the transmitting power)
7	Average power consumption	≤5W
8	Working temperature	-40°C~+80°C
9	Dimension	213*194*60 mm
10	Net weight	3KG

9.2. Functional characteristics

- 1). Support LoRaWAN® network.
 - 2). 8 LoRa receiving channels, 1 transmitting channel, of which 8 receiving channels receive data at the same time.
 - 3). The maximum line of sight communication distance between gateway and module is 15km.
 - 4). Built-in GNSS synchronization position coordinate information.
 - 5). Support Ethernet and 4G LTE data backhaul links.6).
- Robust shell, waterproof IP65 ,
- 7).Working temperature: -40 °C~ +80 °C, which is suitable for the outdoor environment.

9.3. LoRaWAN Gateway Structure and Interface Definition

9.3.1. Gateway Structure Dimension

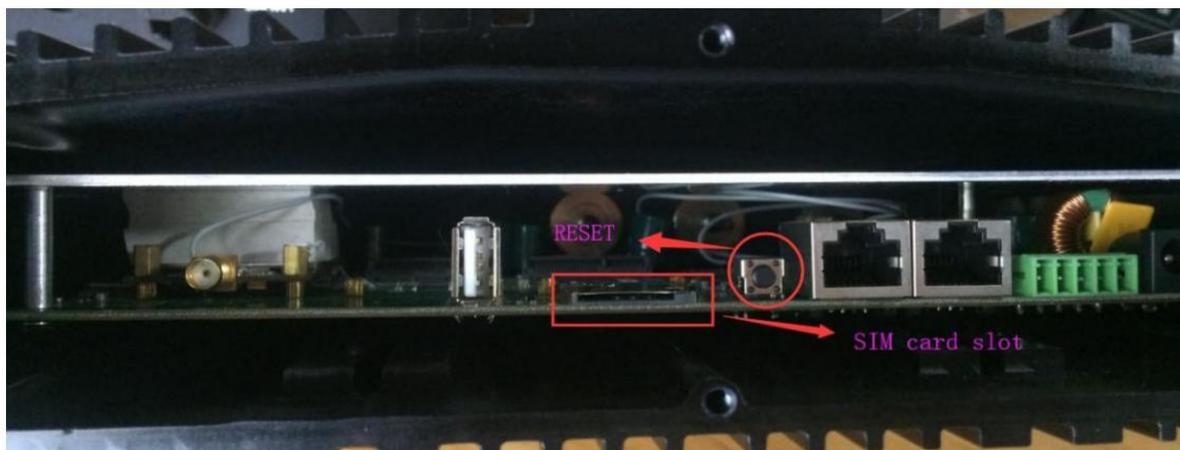


9.3.2. External Interface Definition



No.	Interface/Button	Description
1	LAN POE	24V/1A POE power input
2	POWER	DC power input 12~24V
3	WiFi antenna interface	Connect WiFi_2.4G antenna
4	4G antenna interface	Connect 4G antenna
5	LoRa antenna interface	Connect LoRa antenna
6	GPS receiving antenna	GPS receiving antenna

9.3.3. Internal Interface Definition



No.	Interface/Button	Description
1	SIM Card Slot	Insert a SIM card
2	RESET button	Reset button, reset the system

9.4. LoRaWAN Gateway Installation and Boot

9.4.1 Gateway Installation

Please refer to the manual of gateway installation

9.4.2. Gateway boot

There are two ways for the gateway data return link:

- 1). In Ethernet mode, connect the gateway to the 24V/1A POE power supply and network cable, and it can be turned on after power on.
- 2). In 4G LTE mode, insert a 4G SIM card (it needs to remove the bottom shell of the gateway), and then connect the gateway to a 24V/1A POE power supply, and it can be turned on when it is powered on.

10. Device Management Platform

10.1.Account login

Login URL: <http://lora.haciot.cn:50100/mls/>, enter the assigned user name and password to log in.

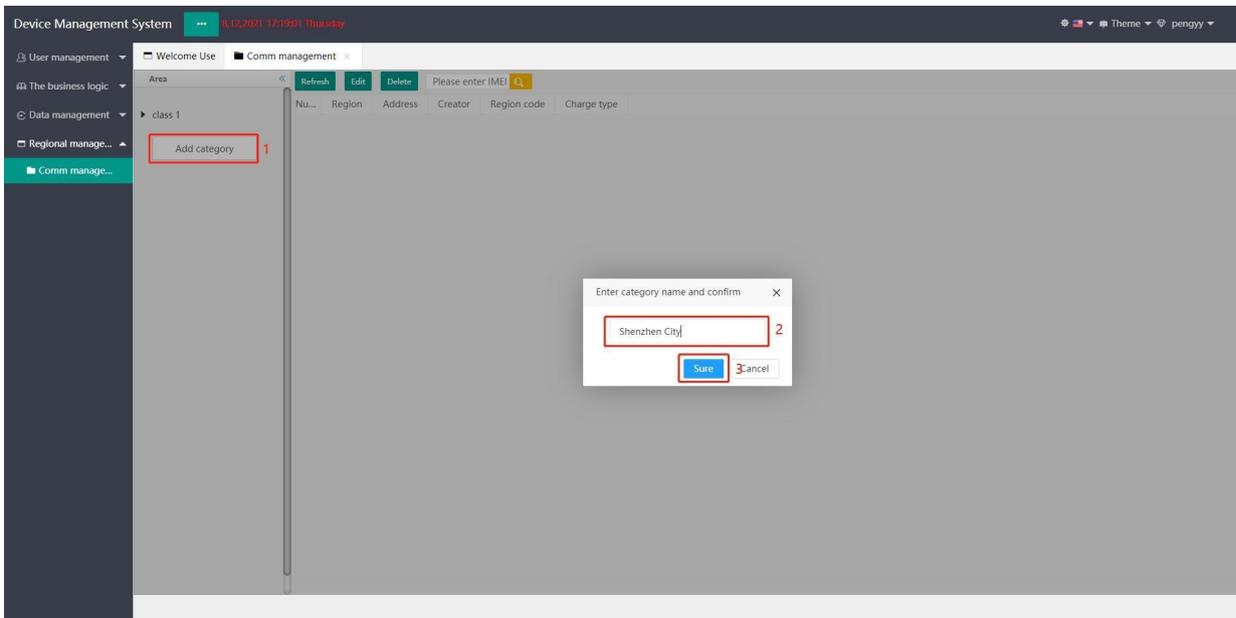
It's shown as below:



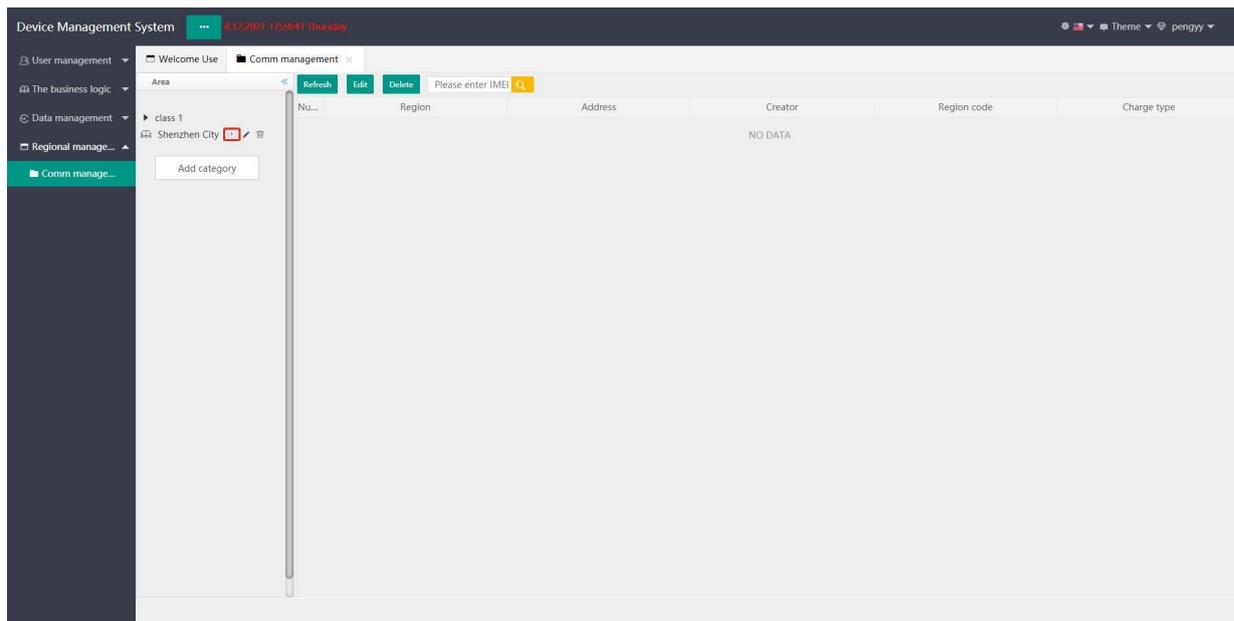
10.2. Community management

The community management is divided into three-level areas, such as the 6th floor of Building 2, Xili University Town Creative Park, Nanshan District, Shenzhen. The first floor is Shenzhen City, the second floor is Nanshan District, and the third floor is the 6th floor of Building 2, Xili University Town Creative Park. The name of the community cannot be repeated. You can add up to three floors, or you can add multiple 2-story and 3-story areas.

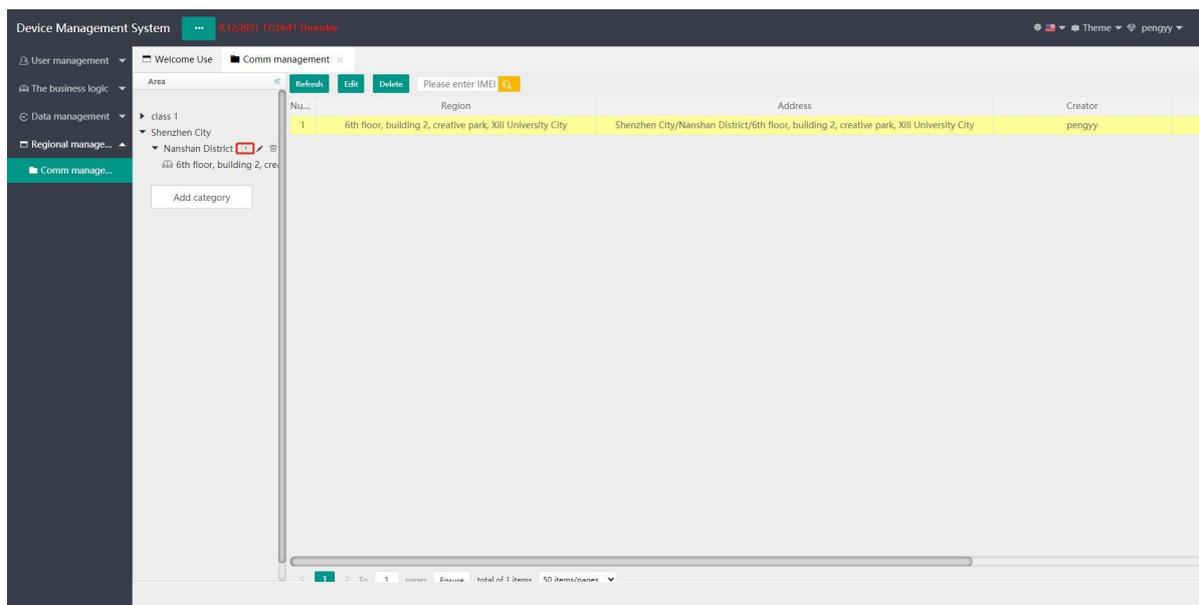
1). Add the first level area, click "Add Category" to pop up the dialog box of category name , enter Shenzhen and click "OK". It's shown as below:



2) Add a second-level area, click the "+" after the first-level area to pop up a dialog box for entering the sub-category name, enter Nanshan District and click "OK". It's shown as below:

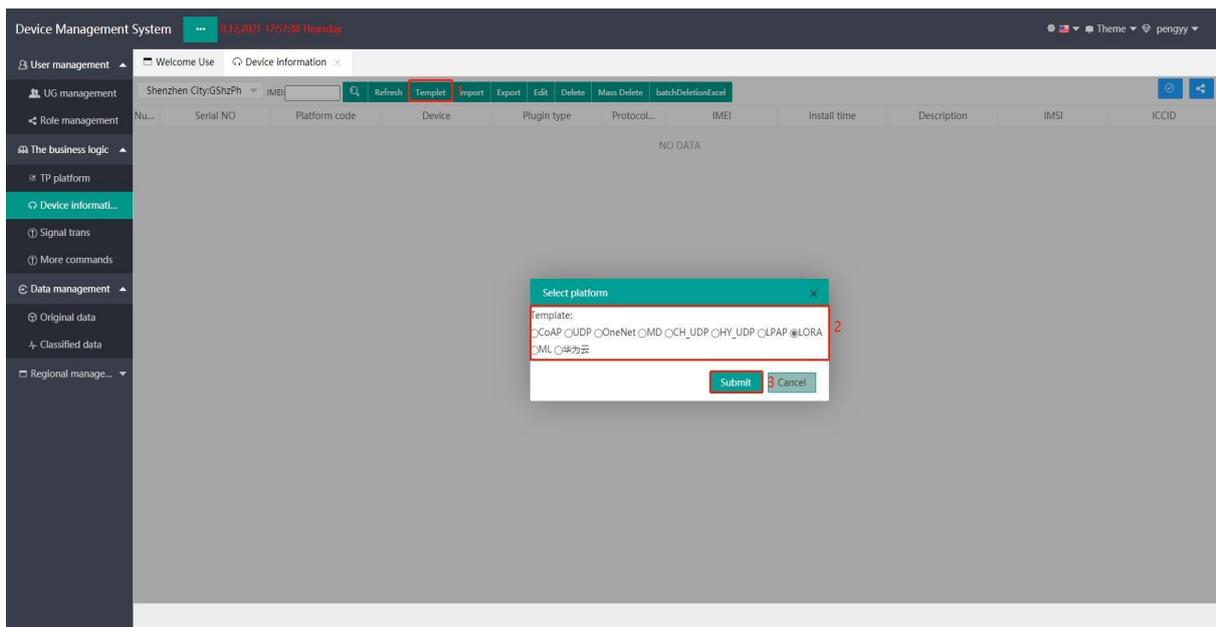


3) Add a third-level area, click the "+" after the second-level area to pop up the dialog box for entering the sub-category name , enter the 6th floor of Building 2, Xili University Town Creative Park, and click "OK". It's shown as below:



10.3. Device information

1) Download the template, click "Template" to pop up the dialog box of "Platform Selection", select "LORA" and click "Submit" to download the template. It's shown as below:

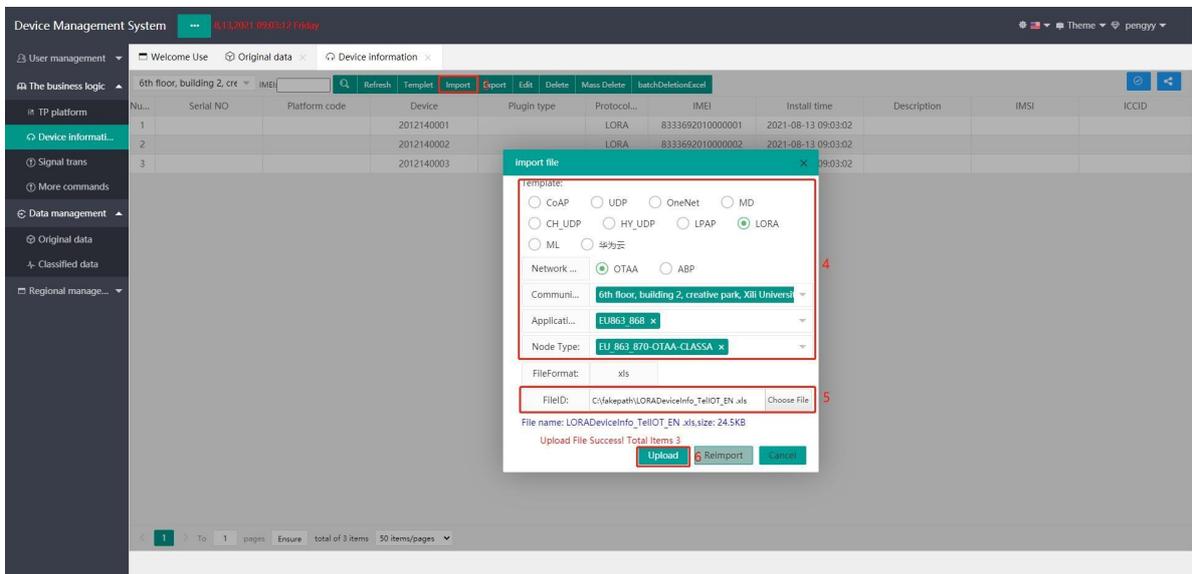
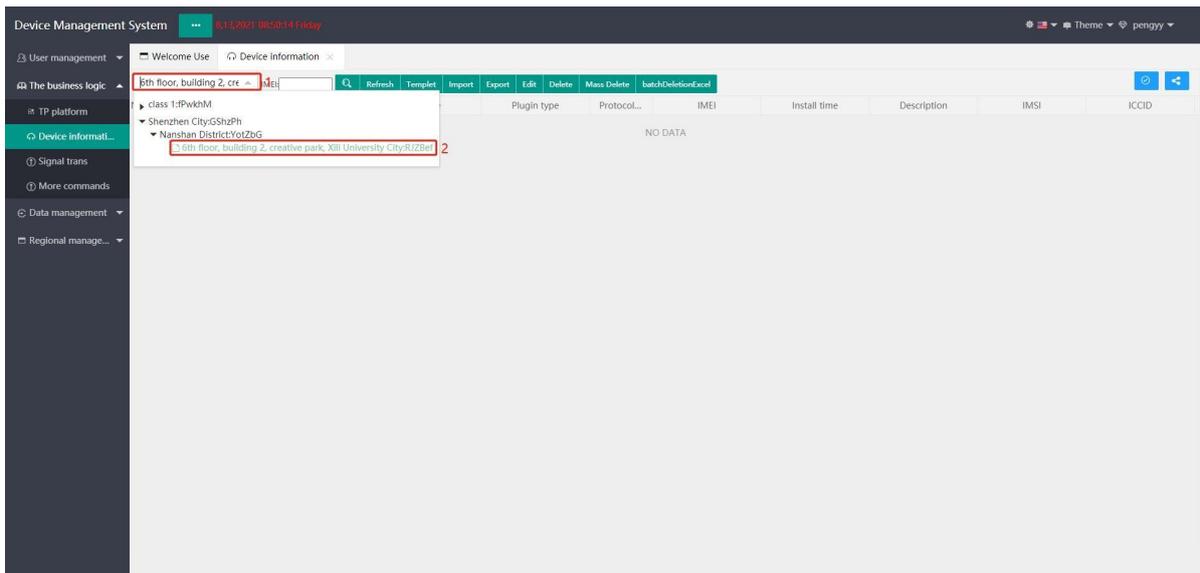


2) Fill in the template information and open the "LORADeviceInfo_TelIOT_EN" form to fill in the module information. It's shown as below:

APFK	ASK	NSK	Short Address	EUI	Device Name	Description	Address	ProtocolType
4841432D4D4C57202003180000033369				8333692010000001	2012140001	Shenzhen		9
4841432D4D4C57202003180000033369				8333692010000002	2012140002	Shenzhen		9
4841432D4D4C57202003180000033369				8333692010000003	2012140003	Shenzhen		9

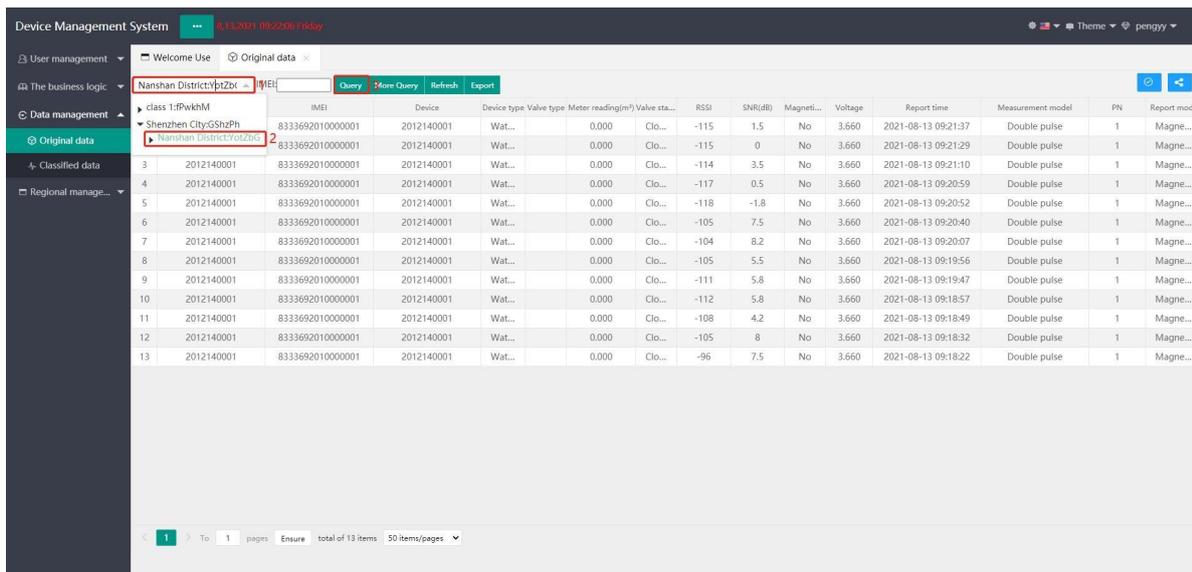
3) Import the template, select the third layer area, click "Import" to pop up the "Import file dialog box", select the template type, network access method, community, application and node type, click "choose file" to load the filled template, and finally click "Upload" ".

It's shown as below:



10.4. Data Management

Select the third layer area, click "query" or enter IMEI (DeviceEui) to query. It's shown as below:



10.5. More Command

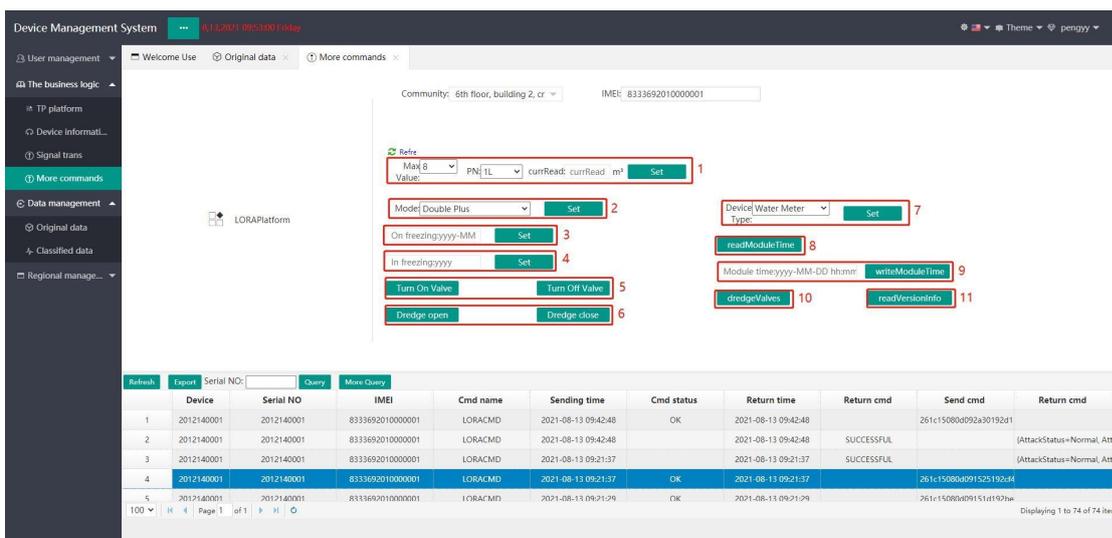
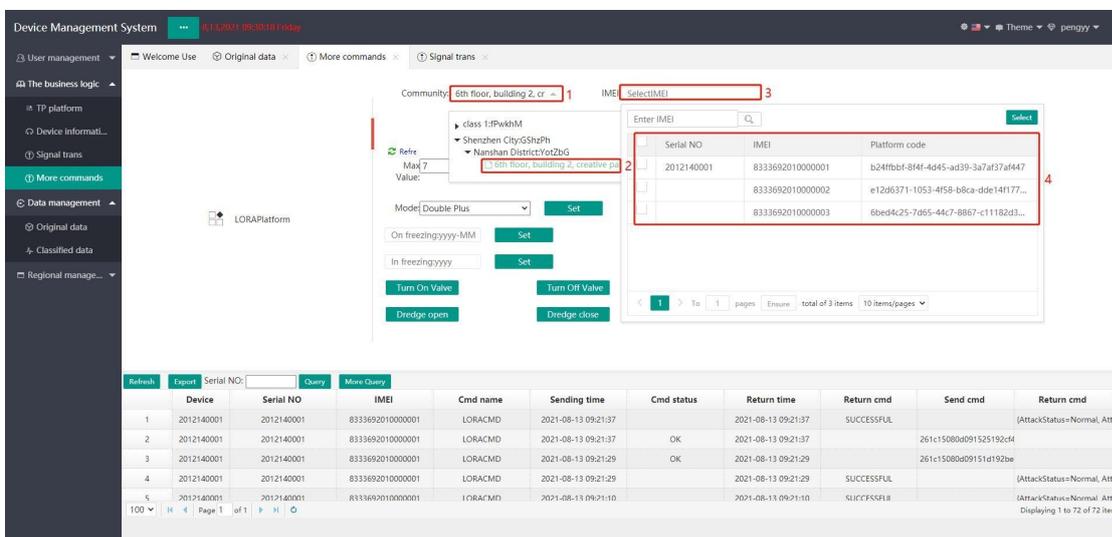
10.5.1 Select the third layer area, check the IMEI (DeviceEui) of meter, click the command that needs to be transmitted, and then trigger the meter to report data. After the platform receives the data reported by the meter, it will transmit the command. After receiving the command by the meter, execute the corresponding action and report the data. The reported data can be inquired in the data management or in the command information column.

10.5.2 Command transmission description form

No.	Command list	Command Description
1	Set the meter readings command	Set the meter readings
2	Metering mode command	Different metering modes can be configured according to the meter, such as: single and dual pulse metering (hall, reed switch, non-magnetic, etc.)
3	Read monthly freeze command	Read the monthly frozen data generated by the meter, and the meter can save the monthly frozen data of the latest 128 months at most
4	Read yearly freeze command	Read the annual frozen data generated by the meter, the meter can save the annual frozen data for a maximum of 10 years
5	Valve control command	It's used to valve control of meter.
6	Timing dredging valve command	It is used to control the valve of meter at regular time. Open the dredge valve at regular time. The meter will complete the valve at the 3rd of each month. Otherwise, the valve will not be dredged.

7	Device type command	It configures different device type of meter, such as: water meter, electric meter, heat meter, gas meter etc.
8	Read module time	It's used to read the current time of meter.
9	Write module time	It's used to set the module time
10	Valve dredge command	It's used to dredge the valve of meter.
11	Read the software version info command	Read the current software version information of meter

It's shown as below:



The command information column will display the uplink and downlink command information, double-click

to view the detailed information. It's shown as below:

The screenshot displays the 'Device Management System' interface. A modal window titled 'Registration Information' is open, showing the following details:

- Return cmd: SUCCESSFUL
- Send cmd: null
- Return cmd: (AttackStatus=Normal, AttackStatusCode=0, BackWaterAlarm=Normal, DER=Normal, DER Code=0, DeviceStatus=Normal, DeviceType=waterMeter, DeviceTypeCode=0, FlowAlarm=Normal, MeasureFault=Normal, MeasureFaultCode=0, PN=1, PNCODE=1, Power-Fail=Normal, Power-FailCode=0, PowerStatus=Normal, PowerStatusCode=0, Rssi=-117.000, Taking WaterAlarm=Normal, TimingDredgeValve=Close, ValveFault=Normal, ValveFaultCode=0, ValveStatus=Close, ValveStatusCode=1, applicationId=30, applicationName=EU863_870_222_b64_data=JBKFFnU0eUARaEgALAAAABoAPDMFACMBQ+=, battery-voltage=3.66, dist=sFTBW125, devaddr=012e9921, devname=3bc908b3-98e3-47ce-b8a8-7937ad0d2c6, freq=867.9, gateway_list=[24c5d9e6325809d9], gatewayid=24c5d9e6325809d9, histor

Below the dialog box, a table lists device registration records:

Device	Serial NO	Serial NO	Device	Time	Time	Send cmd	Return cmd	
1	2012140001	2012140001	8333692010000001	LORACMD	2021-08-13 09:42:48	OK	2021-08-13 09:42:48	261c15080d09a30192d1
2	2012140001	2012140001	8333692010000001	LORACMD	2021-08-13 09:43:48	OK	2021-08-13 09:43:48	SUCCESSFUL
3	2012140001	2012140001	8333692010000001	LORACMD	2021-08-13 09:21:37	OK	2021-08-13 09:21:37	SUCCESSFUL
4	2012140001	2012140001	8333692010000001	LORACMD	2021-08-13 09:21:37	OK	2021-08-13 09:21:37	261c15080d091525192cfd
5	2012140001	2012140001	8333692010000001	LORACMD	2021-08-13 09:21:39	OK	2021-08-13 09:21:39	261c15080d09151e192be